Air Quality Permitting
Technical Memorandum

November 25, 2002

Tier II Operating Permit and Permit To Construct
No. 005-00004
Ash Grove Cement Company, Inkom

T2-010313

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FINAL PERMIT

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ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AIRS	Aerometric Information Retrieval System
AFS	AIRS Facility System
AQCR	Air Quality Control Region
Btu	British thermal unit(s)
CAA	Clean Air Act
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
dscf	dry standard cubic foot or feet
EF	emission factor
EPA	Environmental Protection Agency
FD	fugitive dust
FE	fugitive emissions
ft	foot or feet
gpm	gallons per minute
gr	grain(s)
gr/dscf	grains per dry standard cubic foot
HAPs	Hazardous Air Pollutants
hr	hour(s)
IDAPA	A numbering designation for all administrative rules in Idaho promulgated under the Idaho Administrative Procedures Act
in.	inch(es)
ISCST3	Industrial Source Complex Short Term 3
kg	kilogram
kj	kilojoules
km	kilometers
kW	kilowatts
lb/hr	pound per hour
m	meter(s)
m^3	cubic meter(s)
mg/m^3	milligrams per cubic meter
µm	micrometers
MACT	Maximum Achievable Control Technology
min	minute(s)
MMBtu/hr	million British thermal units per hour
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NSPS	New Source Performance Standards
O_3	ozone
%	percent
Pb	lead
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
ppm	parts per million
s	second(s)
SCC	Source Classification Code

scf	standard cubic feet
SIP	State Implementation Plan
SO_2	sulfur dioxide
TAP	Toxic Air Pollutant
T/yr	tons per year
TSP	total suspended particulates
U.S.	United States
VOC	volatile organic compound
Wt%	percent by weight
yr	year(s)

PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01 Sections 200 - 223, *Rules for the Control of Air Pollution in Idaho* for permits to construct and Sections 400 - 470 for Tier II operating permits.

PROJECT DESCRIPTION

This project is for the modification of Tier II Operating Permit No. 004-00005 for Ash Grove Cement Company (Ash Grove) located at Inkom, Idaho. Ash Grove is requesting an increase in allowable iron ore usage from its current rate of 4,841 T/yr to 7,000 T/yr. Due to Ash Grove's previous error in the iron ore usage calculation, an erroneously low annual iron ore usage rate was submitted and permitted. Ash Grove also requested increased hourly CO emission limits.

The project also involves incorporating Ash Grove's two PTCs, issued January 29, 1999, and May 17, 1999, into the Tier II Operating Permit. Ash Grove did not request that this be done. DEQ decided to include the PTCs in an attempt to avoid confusion over the emission limits. The January 29, 1999 PTC includes an emission limits table that supercedes the emission limits table in the 1997 Tier II. Therefore, this project will include all the current emission limits and operating/monitoring requirements from the existing permits in the Tier II, except for initial compliance testing requirements from the PTCs. The Tier II expiration date will remain the same (December 8, 2002) because this project is not a renewal.

This project does not include Ash Grove's request to replace the #1 coal mill and modify the #1 and #2 cement finish mill dust collector (T2-990005a). That request was received by DEQ on June 24, 1999, and was determined incomplete until adequate modeling is received. This project also does not include Ash Grove's request to modify the Tier II to reflect the rerouting of silica and gypsum and the installation of a quarry stacking belt. According to DEQ's letter dated August 14, 2000, that permitting action is also suspended until the modeling analysis is received.

SUMMARY OF EVENTS

August 15, 2001	DEQ received an application from Ash Grove for a modification to Tier II Operating Permit No. 004-00005, issued December 8, 1997. The project was activated from the backlog of permitting actions on March 22, 2002.
April 2, 2002	The application was declared complete.
June 24, 2002 – July 25, 2002	A public comment period on the draft permit was held. No comments were received during that period.
May 24, 2002	DEQ received from Ash Grove a modeling analysis and request to increase the hourly CO emission limits for the kilns.
July 19, 2002	The modeling analysis with the increased CO emission limits was determined to demonstrate compliance with the NAAQS. Rather than issue separate permits for each modification, DEQ has decided to include the increased CO emission limits in the draft permit and send the permit out for public comment again.
September 4, 2002- October 3, 2002	A second public comment period on draft permit was held. Comments were received from Ash Grove and are provided in Appendix C. The comments request that the permit include the June 10, 2002 consent order requirements to avoid conflict between the consent order language and the Tier II operating permit. The comments also request that the permit expiration date be extended to allow for issuance of the new Tier II required by the consent order. The consent order requires Ash Grove to submit a complete application to modify the Tier II operating permit within 180 days of the effective date of the consent order. One hundred eighty days from June 10, 2002 is December 8, 2002, which is the same day the permit expires. As noted in IDAPA 58.01.01.404.04, the

expiration of a Tier II permit will not affect the operation of a stationary source or a facility during the administrative procedure period associated with the permit renewal process. Therefore, the expiration date does not need to be extended.

A Tier I Operating Permit for Ash Grove Cement's Inkom facility is scheduled to be issued before January 2003. The Tier I permit will include all requirements in the Tier II operating permit.

FACILITY DESCRIPTION

General Process Description

The *Iron Ore Receiving, Crushing, and Storage* emissions unit is the subject of this modification. The manufacture of Portland cement requires a very specific chemical mixture. Limestone, silica/shale, iron ores, and clay materials are proportioned to achieve the proper chemical mixture. Ash Grove discovered that the amount of iron ore permitted is not adequate to maintain the chemical mixture required so they asked for an increase.

Facility Classification

The facility is a designated facility as defined in IDAPA 58.01.01.006.27 (Portland Cement Plant). The AIRS Facility Subsystem classification is A because potential emissions of PM_{10}, SO_2, NO_x and CO are greater than 100 tons per year. The facility is subject to PSD permitting requirements for a major modification because the facility's PTE is greater than 100 T/yr. This facility is a portland cement manufacturer, SIC code 3241.

Area Classification

Ash Grove Cement Company, Bannock county Idaho, is located in AQCR 61. The area is classified as attainment or unclassifiable for all federal and state criteria air pollutants (i.e., PM_{10}, SO_x, O_3, NO_2, CO, and Pb). There are no class I areas within 10 km of the facility.

TECHNICAL ANALYSIS

1. Emissions Estimates

The emissions limits for the iron ore process in the 1997 Tier II permit were set much higher than the calculated potential emission rate (see Table 1.1). The same spreadsheet that was used in the 1997 tech memo was used to calculate the new allowable emissions. The hours per year of operation were changed from 24 to 36 and the annual throughput was changed from 4,841 tons to 7,000 tons. All other inputs to the spreadsheet remained the same. The emission limits in the Tier II permit will be decreased and set at 100% of expected potential emissions. Emissions calculations for iron ore are provided in Appendix A.

Table 1.1 OLD AND NEW IRON ORE PROCESS EMISSION LIMITS

	PM		PM_{10}	
	lb/hr	ton/yr	lb/hr	ton/yr
Old limits	16.38	0.16	7.14	0.07
1999 actual emissions	1.72	0.03	0.82	0.01
2000 actual emissions	1.97	0.04	0.95	0.02
Average of 1999-2000	1.85	0.035	0.89	0.015
New limits (potential)	2.26	0.04	1.08	0.02
Change (actual to potential)	0.41	0.005	0.19	0.005

In a letter received May 24, 2002, Ash Grove requested that the 1-hour CO emission limits for the kilns be increased. The old and new CO emission limits are listed in Table 1.2

Table 1.2 OLD AND NEW KILN CO EMISSION LIMITS

	Kiln No. 1		Kiln No. 2	
	lb/hr[a]	ton/yr	lb/hr[a]	ton/yr
Old limits	234.4	937.7	275.8	1103.2
New limits	550	937.7	650	1103.2
Increase	315.6	0	374.2	0

[a] New limit is based on a 1-hour average.

2. Modeling

No modeling is required for the iron ore modification because the allowable emission rates in the old Tier II permit, issued December 8, 1997, were greater than the new potential emissions. The allowable emissions in the Tier II decreased significantly and are now set to accurately reflect potential emissions.

The modeling analysis for the CO emission limit increase was reviewed by DEQ. The results of the review are presented in Appendix B.

3. Regulatory Review

- Iron Ore Receiving, Crushing, and Storage
- Emissions Limit – (Permit Condition 2.1.1, page 5)

  The PM_{10} SIP permit contains pound per hour and ton per year fugitive emission limits for the *Iron Ore Receiving, Crushing, and Storage* process

- Compliance Demonstration

  Compliance with the pound per hour and ton per year emission limits is demonstrated by not exceeding the iron ore processing rates of 200 T/hr and 7,000 T/yr. Compliance with the emission limits is shown through engineering calculations using AP-42 emission factors and control efficiencies for partial enclosure and moisture in the ore. The engineering calculations are provided in the appendix. The spreadsheet containing the calculations was developed in 1997 as explained in the emissions estimates section.

4. NSPS Applicability

The *Standards of Performance for Portland Cement Plants* (40 CFR 60 Subpart F) do apply to the conveyor transfer points which are part of the iron ore receiving, crushing, and storage emissions unit. As Ash Grove acknowledges in the application, the opacity limit from the transfer points is 10%.

5. NESHAPS Applicability

According to Ash Grove's Tier I permit application, the Inkom facility is an area source of HAPs. Therefore, no requirements of the NESHAP (40 CFR 63 Subpart LLL) are applicable to the iron ore receiving, crushing, and storage emissions unit. The only affected units at an area source are the kilns.

6. AIRS

AIRS/AFS[a] FACILITY-WIDE CLASSIFICATION[b] DATA ENTRY FORM

AIR PROGRAM / POLLUTANT	SIP [c]	PSD [d]	NSPS [e] (Part 60)	NESHAP [f] (Part 61)	MACT [g] (Part 63)	TITLE V	AREA CLASSIFICATION A – Attainment U – Unclassifiable N – Nonattainment
SO_2 [h]	A	A				A	A
No_x [i]	A	A				A	A
CO [j]	A	A				A	A
PM_{10} [k]	A	A				A	A
PT (Particulate) [l]	A	A	A			A	
VOC [m]	B	B				A	
THAP (Total HAPs) [n]							
			APPLICABLE SUBPART				
			F		LLL		

[a] Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

[b] AIRS/AFS Classification Codes:
- A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For NESHAP only, class "A" is applied to each pollutant which is below the 10 ton-per-year (T/yr) threshold, but which contributes to a plant total in excess of 25 T/yr of all NESHAP pollutants.
- SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.
- B = Actual and potential emissions below all applicable major source thresholds.
- C = Class is unknown.
- ND = Major source thresholds are not defined (e.g., radionuclides).

[c] State Implementation Plan
[d] Prevention of Significant Deterioration
[e] New Source Performance Standards
[f] National Emission Standards for Hazardous Air Pollutants
[g] Maximum Achievable Control Technology
[h] Sulfur Dioxide
[i] Nitrogen Oxides
[j] Carbon Monoxide
[k] Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
[l] Particulate Matter
[m] Volatile Organic Compounds
[n] Hazardous Air Pollutants

FEES

Fees apply to this facility in accordance with IDAPA 58.01.01.470. The facility is subject to permit application fees for this revised Tier II Operating Permit of $500.

RECOMMENDATIONS

Based on the review of the application materials, and all applicable state and federal regulations, staff recommends that DEQ issue a modified Tier II operating permit and PTC to Ash Grove Cement Company. Staff members have notified the facility in writing of the required Tier II application fee of five hundred dollars ($500.00). The permit will be issued upon receipt of the fee.

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CC: Laurie Kral, EPA Region 10
Tiffany Floyd, Pocatello Regional Office

APPENDIX A

Emission Estimates

ASH GROVE CEMENT COMPANY, INKOM PLANT; PROCESS FUGITIVE EMISSIONS

				THROUGHPUT						EMISSION FACTORS							EMISSIONS			
SOURCE DESCRIPTION			HRS	DAYS	HRS		MAX.	AVG.		TSP	PM10		PM10	CONTROL			TSP		PM10	
CODE	NAME FROM	NAME TO	/DAY	/YR	/YR	MATERIAL	TON/H	TON/H	TON/YR	LB/TON	LB/TON	REF	FRAC.	MOIST.	CAPT.	BUILD.	LB/HR	T/YR	LB/HR	T/YR
DRILLING, BLASTING AND DOZING																				
F 1	DRILLING		24	0	320	LIMESTONE			435,708	0.0003	0.0001	a	36%	0%	0%	0%		0.06		0.02
F 2	BLASTING		24	0	-	LIMESTONE			435,708			b		0%	0%	0%				
F 3	DOZING	D9L			191	LIMESTONE			435,708	0.0029	0.0014	c	48%					0.00		0.00
		D10N			1,955	LIMESTONE			435,708	0.0029	0.0014	c	48%					0.00		0.00
																Totals:	-	0.06	-	0.02
LIMESTONE RECEIVING, CRUSHING AND STORAGE																				
F 4	LOADER	FEEDER	8	343	2,741	LIMESTONE	200	159	435,708	0.0002	0.0001	c	48%	0%	0%	80%	0.01	0.01	0.00	0.00
F 5	FEEDER	JAW CRUSHER	8	343	2,741	LIMESTONE	200	159	435,708	0.0007	0.0003	c	48%	50%	0%	90%	0.01	0.01	0.00	0.00
F 6	JAW CRUSHER	#1 INCLINE BELT	8	343	2,741	LIMESTONE	200	159	435,708	0.0029	0.0014	c	48%	50%	0%	90%	0.02	0.03	0.01	0.02
F 7	#1 INCLINE BELT	#2 INCLINE BELT	8	343	2,741	LIMESTONE	200	199	544,635	0.0029	0.0014	c	48%	50%	0%	60%	0.12	0.16	0.06	0.08
F 14	#2 INCLINE BELT	SCREEN #1	8	361	2,891	LIMESTONE	200	188	544,635	0.0029	0.0014	c	48%	20%	0%	90%	0.04	0.06	0.02	0.03
F 15	SCREEN #1	CROSS CTRY. BELT	8	361	2,891	LIMESTONE	200	151	435,708	0.0029	0.0014	c	48%	20%	0%	90%	0.04	0.05	0.02	0.02
F 16	SCREEN #1	HAMMER MILL	8	361	2,891	LIMESTONE	200	38	108,927	0.0007	0.0003	c	48%	20%	0%	90%	0.00	0.00	0.00	0.00
F 17	HAMMER MILL	#1 INCLINE BELT	8	361	2,891	LIMESTONE	200	38	108,927	0.0029	0.0014	c	48%	50%	0%	90%	0.01	0.01	0.00	0.00
F 18	CROSS CTRY. BELT	BELT B	8	361	2,891	LIMESTONE	200	151	435,708	0.0029	0.0014	c	48%	20%	0%	0%	0.35	0.51	0.17	0.24
F 19	BELT B	BELT C	8	361	2,891	LIMESTONE	200	151	435,708	0.0029	0.0014	c	48%	20%	0%	0%	0.35	0.51	0.17	0.24
F 20	BELT C	SILOS (3)	8	361	2,891	LIMESTONE	200	151	435,708	0.0029	0.0014	c	48%	20%	0%	90%	0.04	0.05	0.02	0.02
STOCKPILE CRUSHED ROCK:																				
F 24	CROSS CTRY. BELT	CHUTE	8	25	200	LIMESTONE	200	200	40,000	0.0029	0.0014	c	48%	20%	0%	0%	0.47	0.05	0.22	0.02
F 25	CHUTE	GROUND	8	25	200	LIMESTONE	200	200	40,000	0.0029	0.0014	c	48%	20%	0%	0%	0.47	0.05	0.22	0.02
																Totals:	1.91	1.49	0.92	0.72
IRON ORE RECEIVING, CRUSHING AND STORAGE (1999 Actual)																				
F 4	LOADER	FEEDER	2	18	36	IRON ORE	200	148	5,324	0.0002	0.0001	c	48%	0%	0%	80%	0.01	0.00	0.00	0.00
F 5	FEEDER	JAW CRUSHER	2	18	36	IRON ORE	200	148	5,324	0.0007	0.0003	c	48%	50%	0%	90%	0.01	0.00	0.00	0.00
F 6	JAW CRUSHER	#1 INCLINE BELT	2	18	36	IRON ORE	200	148	5,324	0.0029	0.0014	c	48%	50%	0%	90%	0.02	0.00	0.01	0.00
F 7	#1 INCLINE BELT	#2 INCLINE BELT	2	18	36	IRON ORE	200	148	5,324	0.0029	0.0014	c	48%	50%	0%	60%	0.09	0.00	0.04	0.00
F 8	#2 INCLINE BELT	#3 INCLINE BELT	2	18	36	IRON ORE	200	148	5,324	0.0029	0.0014	c	48%	20%	0%	90%	0.03	0.00	0.02	0.00
F 9	#3 INCLINE BELT	SCREEN #2	2	18	36	IRON ORE	200	148	5,324	0.0313	0.0150	c	48%	20%	0%	90%	0.37	0.01	0.18	0.00
F 10	SCREEN #2	CROSS CTRY. BELT	2	18	36	IRON ORE	200	148	5,324	0.0029	0.0014	c	48%	20%	0%	90%	0.03	0.00	0.02	0.00
F 11	SCREEN #2	CONE CRUSHER	2	0	-	IRON ORE	-	n/a	-	0.0029	0.0014	c	48%	20%	0%	90%	-	-	-	-
F 12	CONE CRUSHER	#4 INCLINE BELT	2	0	-	IRON ORE	-	n/a	-	0.0029	0.0014	c	48%	20%	0%	0%	-	-	-	-
F 13	#4 INCLINE BELT	#2 INCLINE BELT	2	0	-	IRON ORE	-	n/a	-	0.0029	0.0014	c	48%	20%	0%	0%	-	-	-	-
F 14	#2 INCLINE BELT	SCREEN #1	2	18	36	IRON ORE	200	148	5,324	0.0313	0.0150	c	48%	20%	0%	90%	0.37	0.01	0.18	0.00
F 15	SCREEN #1	CROSS CTRY. BELT	2	18	36	IRON ORE	200	148	5,324	0.0029	0.0014	c	48%	20%	0%	90%	0.03	0.00	0.02	0.00
F 16	SCREEN #1	HAMMER MILL	2	18	36	IRON ORE	200	148	5,324	0.0007	0.0003	c	48%	20%	0%	90%	0.01	0.00	0.00	0.00
F 17	HAMMER MILL	#1 INCLINE BELT	2	18	36	IRON ORE	200	148	5,324	0.0029	0.0014	c	48%	50%	0%	90%	0.02	0.00	0.01	0.00
F 18	CROSS CTRY. BELT	BELT B	2	18	36	IRON ORE	200	148	5,324	0.0029	0.0014	c	48%	20%	0%	0%	0.35	0.01	0.17	0.00
F 19	BELT B	BELT C	2	18	36	IRON ORE	200	148	5,324	0.0029	0.0014	c	48%	20%	0%	0%	0.35	0.01	0.17	0.00
F 20	BELT C	SILOS (3)	2	18	36	IRON ORE	200	148	5,324	0.0029	0.0014	c	48%	20%	0%	90%	0.03	0.00	0.02	0.00
																Totals:	1.72	0.03	0.82	0.01
SILICA RECEIVING, CRUSHING AND STORAGE																				
F 4	LOADER	FEEDER	4	55	218	SILICA	200	200	43,571	0.0002	0.0001	c	48%	0%	0%	80%	0.01	0.00	0.00	0.00
F 5	FEEDER	JAW CRUSHER	4	55	218	SILICA	200	200	43,571	0.0007	0.0003	c	48%	50%	0%	90%	0.01	0.00	0.00	0.00
F 6	JAW CRUSHER	#1 INCLINE BELT	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	50%	0%	90%	0.03	0.00	0.01	0.00
F 7	#1 INCLINE BELT	#2 INCLINE BELT	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	50%	0%	60%	0.12	0.01	0.06	0.01
F 8	#2 INCLINE BELT	#3 INCLINE BELT	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	20%	0%	90%	0.05	0.01	0.02	0.00
F 9	#3 INCLINE BELT	SCREEN #2	4	55	218	SILICA	200	200	43,571	0.0313	0.0150	c	48%	20%	0%	90%	0.50	0.05	0.24	0.03
F 10	SCREEN #2	CROSS CTRY. BELT	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	20%	0%	90%	0.05	0.01	0.02	0.00
F 11	SCREEN #2	CONE CRUSHER	4	55	218	SILICA	200	200	43,571	0.0007	0.0003	c	48%	20%	0%	90%	0.01	0.00	0.01	0.00
F 12	CONE CRUSHER	#4 INCLINE BELT	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	20%	0%	0%	0.47	0.05	0.22	0.02
F 13	#4 INCLINE BELT	#2 INCLINE BELT	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	20%	0%	0%	0.47	0.05	0.22	0.02
F 18	CROSS CTRY. BELT	BELT B	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	20%	0%	0%	0.47	0.05	0.22	0.02
F 19	BELT B	BELT C	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	20%	0%	0%	0.47	0.05	0.22	0.02
F 20	BELT C	SILOS (3)	4	104	218	SILICA	200	105	43,571	0.0029	0.0014	c	48%	20%	0%	90%	0.02	0.01	0.01	0.00
F 24	CROSS CTRY. BELT	CHUTE	8	13	100	SILICA	200	436	43,571	0.0029	0.0014	c	48%	20%	0%	0%	1.02	0.05	0.49	0.02

ASH GROVE CEMENT COMPANY, INKOM PLANT; PROCESS FUGITIVE EMISSIONS

				THROUGHPUT						EMISSION FACTORS							EMISSIONS			
SOURCE DESCRIPTION				HRS	DAYS	HRS		MAX.	AVG.		TSP	PM10		PM10	CONTROL			TSP		PM10	
CODE		NAME FROM	NAME TO	/DAY	/YR	/YR	MATERIAL	TON/H	TON/H	TON/YR	LB/TON	LB/TON	REF	FRAC.	MOIST.	CAPT.	BUILD.	LB/HR	T/YR	LB/HR	T/YR
DRILLING, BLASTING AND DOZING																					
F	1	DRILLING		24	0	320	LIMESTONE			435,708	0.0003	0.0001	a	36%	0%	0%	0%		0.06		0.02
F	2	BLASTING		24	0	-	LIMESTONE			435,708			b		0%	0%	0%				
F	3	DOZING	D9L			191	LIMESTONE			435,708	0.0029	0.0014	c	48%					0.00		0.00
			D10N			1,955	LIMESTONE			435,708	0.0029	0.0014	c	48%					0.00		0.00
																	Totals:	-	0.06	-	0.02
LIMESTONE RECEIVING, CRUSHING AND STORAGE																					
F	4	LOADER	FEEDER	8	343	2,741	LIMESTONE	200	159	435,708	0.0002	0.0001	c	48%	0%	0%	80%	0.01	0.01	0.00	0.00
F	5	FEEDER	JAW CRUSHER	8	343	2,741	LIMESTONE	200	159	435,708	0.0007	0.0003	c	48%	50%	0%	90%	0.01	0.01	0.00	0.00
F	6	JAW CRUSHER	#1 INCLINE BELT	8	343	2,741	LIMESTONE	200	159	435,708	0.0029	0.0014	c	48%	50%	0%	90%	0.02	0.03	0.01	0.02
F	7	#1 INCLINE BELT	#2 INCLINE BELT	8	343	2,741	LIMESTONE	200	199	544,635	0.0029	0.0014	c	48%	50%	0%	60%	0.12	0.16	0.06	0.08
F	14	#2 INCLINE BELT	SCREEN #1	8	361	2,891	LIMESTONE	200	188	544,635	0.0029	0.0014	c	48%	20%	0%	90%	0.04	0.06	0.02	0.03
F	15	SCREEN #1	CROSS CTRY. BELT	8	361	2,891	LIMESTONE	200	151	435,708	0.0029	0.0014	c	48%	20%	0%	90%	0.04	0.05	0.02	0.02
F	16	SCREEN #1	HAMMER MILL	8	361	2,891	LIMESTONE	200	38	108,927	0.0007	0.0003	c	48%	20%	0%	90%	0.00	0.00	0.00	0.00
F	17	HAMMER MILL	#1 INCLINE BELT	8	361	2,891	LIMESTONE	200	38	108,927	0.0029	0.0014	c	48%	50%	0%	90%	0.01	0.01	0.00	0.00
F	18	CROSS CTRY. BELT	BELT B	8	361	2,891	LIMESTONE	200	151	435,708	0.0029	0.0014	c	48%	20%	0%	0%	0.35	0.51	0.17	0.24
F	19	BELT B	BELT C	8	361	2,891	LIMESTONE	200	151	435,708	0.0029	0.0014	c	48%	20%	0%	0%	0.35	0.51	0.17	0.24
F	20	BELT C	SILOS (3)	8	361	2,891	LIMESTONE	200	151	435,708	0.0029	0.0014	c	48%	20%	0%	90%	0.04	0.05	0.02	0.02
STOCKPILE CRUSHED ROCK:																					
F	24	CROSS CTRY. BELT	CHUTE	8	25	200	LIMESTONE	200	200	40,000	0.0029	0.0014	c	48%	20%	0%	0%	0.47	0.05	0.22	0.02
F	25	CHUTE	GROUND	8	25	200	LIMESTONE	200	200	40,000	0.0029	0.0014	c	48%	20%	0%	0%	0.47	0.05	0.22	0.02
																	Totals:	1.91	1.49	0.92	0.72
IRON ORE RECEIVING, CRUSHING AND STORAGE (2000 Actual)																					
F	4	LOADER	FEEDER	2	18	36	IRON ORE	200	170	6,123	0.0002	0.0001	c	48%	0%	0%	80%	0.01	0.00	0.00	0.00
F	5	FEEDER	JAW CRUSHER	2	18	36	IRON ORE	200	170	6,123	0.0007	0.0003	c	48%	50%	0%	90%	0.01	0.00	0.00	0.00
F	6	JAW CRUSHER	#1 INCLINE BELT	2	18	36	IRON ORE	200	170	6,123	0.0029	0.0014	c	48%	50%	0%	90%	0.02	0.00	0.01	0.00
F	7	#1 INCLINE BELT	#2 INCLINE BELT	2	18	36	IRON ORE	200	170	6,123	0.0029	0.0014	c	48%	50%	0%	60%	0.10	0.00	0.05	0.00
F	8	#2 INCLINE BELT	#3 INCLINE BELT	2	18	36	IRON ORE	200	170	6,123	0.0029	0.0014	c	48%	20%	0%	90%	0.04	0.00	0.02	0.00
F	9	#3 INCLINE BELT	SCREEN #2	2	18	36	IRON ORE	200	170	6,123	0.0313	0.0150	c	48%	20%	0%	90%	0.43	0.01	0.20	0.00
F	10	SCREEN #2	CROSS CTRY. BELT	2	18	36	IRON ORE	200	170	6,123	0.0029	0.0014	c	48%	20%	0%	90%	0.04	0.00	0.02	0.00
F	11	SCREEN #2	CONE CRUSHER	2	0	-	IRON ORE	-	n/a	-	0.0029	0.0014	c	48%	20%	0%	90%	-	-	-	-
F	12	CONE CRUSHER	#4 INCLINE BELT	2	0	-	IRON ORE	-	n/a	-	0.0029	0.0014	c	48%	20%	0%	0%	-	-	-	-
F	13	#4 INCLINE BELT	#2 INCLINE BELT	2	0	-	IRON ORE	-	n/a	-	0.0029	0.0014	c	48%	20%	0%	0%	-	-	-	-
F	14	#2 INCLINE BELT	SCREEN #1	2	18	36	IRON ORE	200	170	6,123	0.0313	0.0150	c	48%	20%	0%	90%	0.43	0.01	0.20	0.00
F	15	SCREEN #1	CROSS CTRY. BELT	2	18	36	IRON ORE	200	170	6,123	0.0029	0.0014	c	48%	20%	0%	90%	0.04	0.00	0.02	0.00
F	16	SCREEN #1	HAMMER MILL	2	18	36	IRON ORE	200	170	6,123	0.0007	0.0003	c	48%	20%	0%	90%	0.01	0.00	0.00	0.00
F	17	HAMMER MILL	#1 INCLINE BELT	2	18	36	IRON ORE	200	170	6,123	0.0029	0.0014	c	48%	50%	0%	90%	0.02	0.00	0.01	0.00
F	18	CROSS CTRY. BELT	BELT B	2	18	36	IRON ORE	200	170	6,123	0.0029	0.0014	c	48%	20%	0%	0%	0.40	0.01	0.19	0.00
F	19	BELT B	BELT C	2	18	36	IRON ORE	200	170	6,123	0.0029	0.0014	c	48%	20%	0%	0%	0.40	0.01	0.19	0.00
F	20	BELT C	SILOS (3)	2	18	36	IRON ORE	200	170	6,123	0.0029	0.0014	c	48%	20%	0%	90%	0.04	0.00	0.02	0.00
																	Totals:	1.97	0.04	0.95	0.02
SILICA RECEIVING, CRUSHING AND STORAGE																					
F	4	LOADER	FEEDER	4	55	218	SILICA	200	200	43,571	0.0002	0.0001	c	48%	0%	0%	80%	0.01	0.00	0.00	0.00
F	5	FEEDER	JAW CRUSHER	4	55	218	SILICA	200	200	43,571	0.0007	0.0003	c	48%	50%	0%	90%	0.01	0.00	0.00	0.00
F	6	JAW CRUSHER	#1 INCLINE BELT	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	50%	0%	90%	0.03	0.00	0.01	0.00
F	7	#1 INCLINE BELT	#2 INCLINE BELT	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	50%	0%	60%	0.12	0.01	0.06	0.01
F	8	#2 INCLINE BELT	#3 INCLINE BELT	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	20%	0%	90%	0.05	0.01	0.02	0.00
F	9	#3 INCLINE BELT	SCREEN #2	4	55	218	SILICA	200	200	43,571	0.0313	0.0150	c	48%	20%	0%	90%	0.50	0.05	0.24	0.03
F	10	SCREEN #2	CROSS CTRY. BELT	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	20%	0%	90%	0.05	0.01	0.02	0.00
F	11	SCREEN #2	CONE CRUSHER	4	55	218	SILICA	200	200	43,571	0.0007	0.0003	c	48%	20%	0%	90%	0.01	0.00	0.01	0.00
F	12	CONE CRUSHER	#4 INCLINE BELT	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	20%	0%	0%	0.47	0.05	0.22	0.02
F	13	#4 INCLINE BELT	#2 INCLINE BELT	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	20%	0%	0%	0.47	0.05	0.22	0.02
F	18	CROSS CTRY. BELT	BELT B	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	20%	0%	0%	0.47	0.05	0.22	0.02
F	19	BELT B	BELT C	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	20%	0%	0%	0.47	0.05	0.22	0.02
F	20	BELT C	SILOS (3)	4	104	218	SILICA	200	105	43,571	0.0029	0.0014	c	48%	20%	0%	90%	0.02	0.01	0.01	0.00
F	24	CROSS CTRY. BELT	CHUTE	8	13	100	SILICA	200	436	43,571	0.0029	0.0014	c	48%	20%	0%	0%	1.02	0.05	0.49	0.02

ASH GROVE CEMENT COMPANY, INKOM PLANT; PROCESS FUGITIVE EMISSIONS

SOURCE DESCRIPTION			THROUGHPUT							EMISSION FACTORS							EMISSIONS			
			HRS	DAYS	HRS		MAX.	AVG.		TSP	PM10		PM10	CONTROL			TSP		PM10	
CODE	NAME FROM	NAME TO	/DAY	/YR	/YR	MATERIAL	TON/H	TON/H	TON/YR	LB/TON	LB/TON	REF	FRAC.	MOIST.	CAPT.	BUILD.	LB/HR	T/YR	LB/HR	T/YR
DRILLING, BLASTING AND DOZING																				
F 1	DRILLING		24	0	320	LIMESTONE			435,708	0.0003	0.0001	a	36%	0%	0%	0%		0.06		0.02
F 2	BLASTING		24	0	-	LIMESTONE			435,708			b		0%	0%	0%				
F 3	DOZING	D9L			191	LIMESTONE			435,708	0.0029	0.0014	c	48%					0.00		0.00
		D10N			1,955	LIMESTONE			435,708	0.0029	0.0014	c	48%					0.00		0.00
																Totals:	-	0.06	-	0.02
LIMESTONE RECEIVING, CRUSHING AND STORAGE																				
F 4	LOADER	FEEDER	8	343	2,741	LIMESTONE	200	159	435,708	0.0002	0.0001	c	48%	0%	0%	80%	0.01	0.01	0.00	0.00
F 5	FEEDER	JAW CRUSHER	8	343	2,741	LIMESTONE	200	159	435,708	0.0007	0.0003	c	48%	50%	0%	90%	0.01	0.01	0.00	0.00
F 6	JAW CRUSHER	#1 INCLINE BELT	8	343	2,741	LIMESTONE	200	159	435,708	0.0029	0.0014	c	48%	50%	0%	90%	0.02	0.03	0.01	0.02
F 7	#1 INCLINE BELT	#2 INCLINE BELT	8	343	2,741	LIMESTONE	200	199	544,635	0.0029	0.0014	c	48%	50%	0%	60%	0.12	0.16	0.06	0.08
F 14	#2 INCLINE BELT	SCREEN #1	8	361	2,891	LIMESTONE	200	188	544,635	0.0029	0.0014	c	48%	20%	0%	90%	0.04	0.06	0.02	0.03
F 15	SCREEN #1	CROSS CTRY. BELT	8	361	2,891	LIMESTONE	200	151	435,708	0.0029	0.0014	c	48%	20%	0%	90%	0.04	0.05	0.02	0.02
F 16	SCREEN #1	HAMMER MILL	8	361	2,891	LIMESTONE	200	38	108,927	0.0007	0.0003	c	48%	20%	0%	90%	0.00	0.00	0.00	0.00
F 17	HAMMER MILL	#1 INCLINE BELT	8	361	2,891	LIMESTONE	200	38	108,927	0.0029	0.0014	c	48%	50%	0%	90%	0.01	0.01	0.00	0.00
F 18	CROSS CTRY. BELT	BELT B	8	361	2,891	LIMESTONE	200	151	435,708	0.0029	0.0014	c	48%	20%	0%	0%	0.35	0.51	0.17	0.24
F 19	BELT B	BELT C	8	361	2,891	LIMESTONE	200	151	435,708	0.0029	0.0014	c	48%	20%	0%	0%	0.35	0.51	0.17	0.24
F 20	BELT C	SILOS (3)	8	361	2,891	LIMESTONE	200	151	435,708	0.0029	0.0014	c	48%	20%	0%	90%	0.04	0.05	0.02	0.02
STOCKPILE CRUSHED ROCK:																				
F 24	CROSS CTRY. BELT	CHUTE	8	25	200	LIMESTONE	200	200	40,000	0.0029	0.0014	c	48%	20%	0%	0%	0.47	0.05	0.22	0.02
F 25	CHUTE	GROUND	8	25	200	LIMESTONE	200	200	40,000	0.0029	0.0014	c	48%	20%	0%	0%	0.47	0.05	0.22	0.02
																Totals:	1.91	1.49	0.92	0.72
IRON ORE RECEIVING, CRUSHING AND STORAGE (Potential)																				
F 4	LOADER	FEEDER	2	18	36	IRON ORE	200	194	7,000	0.0002	0.0001	c	48%	0%	0%	80%	0.01	0.00	0.00	0.00
F 5	FEEDER	JAW CRUSHER	2	18	36	IRON ORE	200	194	7,000	0.0007	0.0003	c	48%	50%	0%	90%	0.01	0.00	0.00	0.00
F 6	JAW CRUSHER	#1 INCLINE BELT	2	18	36	IRON ORE	200	194	7,000	0.0029	0.0014	c	48%	50%	0%	90%	0.03	0.00	0.01	0.00
F 7	#1 INCLINE BELT	#2 INCLINE BELT	2	18	36	IRON ORE	200	194	7,000	0.0029	0.0014	c	48%	50%	0%	60%	0.11	0.00	0.05	0.00
F 8	#2 INCLINE BELT	#3 INCLINE BELT	2	18	36	IRON ORE	200	194	7,000	0.0029	0.0014	c	48%	20%	0%	90%	0.05	0.00	0.02	0.00
F 9	#3 INCLINE BELT	SCREEN #2	2	18	36	IRON ORE	200	194	7,000	0.0313	0.0150	c	48%	20%	0%	90%	0.49	0.01	0.23	0.00
F 10	SCREEN #2	CROSS CTRY. BELT	2	18	36	IRON ORE	200	194	7,000	0.0029	0.0014	c	48%	20%	0%	90%	0.05	0.00	0.02	0.00
F 11	SCREEN #2	CONE CRUSHER	2	0	-	IRON ORE	-	n/a	-	0.0029	0.0014	c	48%	20%	0%	90%	-	-	-	-
F 12	CONE CRUSHER	#4 INCLINE BELT	2	0	-	IRON ORE	-	n/a	-	0.0029	0.0014	c	48%	20%	0%	0%	-	-	-	-
F 13	#4 INCLINE BELT	#2 INCLINE BELT	2	0	-	IRON ORE	-	n/a	-	0.0029	0.0014	c	48%	20%	0%	0%	-	-	-	-
F 14	#2 INCLINE BELT	SCREEN #1	2	18	36	IRON ORE	200	194	7,000	0.0313	0.0150	c	48%	20%	0%	90%	0.49	0.01	0.23	0.00
F 15	SCREEN #1	CROSS CTRY. BELT	2	18	36	IRON ORE	200	194	7,000	0.0029	0.0014	c	48%	20%	0%	90%	0.05	0.00	0.02	0.00
F 16	SCREEN #1	HAMMER MILL	2	18	36	IRON ORE	200	194	7,000	0.0007	0.0003	c	48%	20%	0%	90%	0.01	0.00	0.01	0.00
F 17	HAMMER MILL	#1 INCLINE BELT	2	18	36	IRON ORE	200	194	7,000	0.0029	0.0014	c	48%	50%	0%	90%	0.03	0.00	0.01	0.00
F 18	CROSS CTRY. BELT	BELT B	2	18	36	IRON ORE	200	194	7,000	0.0029	0.0014	c	48%	20%	0%	0%	0.45	0.01	0.22	0.00
F 19	BELT B	BELT C	2	18	36	IRON ORE	200	194	7,000	0.0029	0.0014	c	48%	20%	0%	0%	0.45	0.01	0.22	0.00
F 20	BELT C	SILOS (3)	2	18	36	IRON ORE	200	194	7,000	0.0029	0.0014	c	48%	20%	0%	90%	0.05	0.00	0.02	0.00
																Totals:	2.26	0.04	1.08	0.02
SILICA RECEIVING, CRUSHING AND STORAGE																				
F 4	LOADER	FEEDER	4	55	218	SILICA	200	200	43,571	0.0002	0.0001	c	48%	0%	0%	80%	0.01	0.00	0.00	0.00
F 5	FEEDER	JAW CRUSHER	4	55	218	SILICA	200	200	43,571	0.0007	0.0003	c	48%	50%	0%	90%	0.01	0.00	0.00	0.00
F 6	JAW CRUSHER	#1 INCLINE BELT	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	50%	0%	90%	0.03	0.00	0.01	0.00
F 7	#1 INCLINE BELT	#2 INCLINE BELT	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	50%	0%	60%	0.12	0.01	0.06	0.01
F 8	#2 INCLINE BELT	#3 INCLINE BELT	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	20%	0%	90%	0.05	0.01	0.02	0.00
F 9	#3 INCLINE BELT	SCREEN #2	4	55	218	SILICA	200	200	43,571	0.0313	0.0150	c	48%	20%	0%	90%	0.50	0.05	0.24	0.03
F 10	SCREEN #2	CROSS CTRY. BELT	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	20%	0%	90%	0.05	0.01	0.02	0.00
F 11	SCREEN #2	CONE CRUSHER	4	55	218	SILICA	200	200	43,571	0.0007	0.0003	c	48%	20%	0%	90%	0.01	0.00	0.01	0.00
F 12	CONE CRUSHER	#4 INCLINE BELT	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	20%	0%	0%	0.47	0.05	0.22	0.02
F 13	#4 INCLINE BELT	#2 INCLINE BELT	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	20%	0%	0%	0.47	0.05	0.22	0.02
F 18	CROSS CTRY. BELT	BELT B	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	20%	0%	0%	0.47	0.05	0.22	0.02
F 19	BELT B	BELT C	4	55	218	SILICA	200	200	43,571	0.0029	0.0014	c	48%	20%	0%	0%	0.47	0.05	0.22	0.02
F 20	BELT C	SILOS (3)	4	104	218	SILICA	200	105	43,571	0.0029	0.0014	c	48%	20%	0%	90%	0.02	0.01	0.01	0.00
F 24	CROSS CTRY. BELT	CHUTE	8	13	100	SILICA	200	436	43,571	0.0029	0.0014	c	48%	20%	0%	0%	1.02	0.05	0.49	0.02

ASH GROVE CEMENT COMPANY, INKOM PLANT; PROCESS FUGITIVE EMISSIONS

				THROUGHPUT							EMISSION FACTORS							EMISSIONS			
SOURCE DESCRIPTION				HRS	DAYS	HRS		MAX.	AVG.		TSP	PM10		PM10	CONTROL			TSP		PM10	
	CODE	NAME FROM	NAME TO	/DAY	/YR	/YR	MATERIAL	TON/H	TON/H	TON/YR	LB/TON	LB/TON	REF	FRAC.	MOIST.	CAPT.	BUILD.	LB/HR	T/YR	LB/HR	T/YR
F	235	BIN #3	PACKER #3	24	0	-	Masonry	150	n/a	-	0.2700	0.1350	e	50%	0%	95%	99%	-	-	-	-
F	236	BIN #3/PACKER #3	SPILL SCREW	24	0	-	Masonry	150	n/a	-	0.2700	0.1350	e	50%	0%	95%	99%	-	-	-	-
F	237	SPILL SCREW	ELEVATOR #3	24	0	-	Masonry	150	n/a	-	0.2700	0.1350	e	50%	0%	95%	99%	-	-	-	-
F	238	ELEVATOR #3	BIN #3	24	0	-	Masonry	150	n/a	-	0.2700	0.1350	e	50%	0%	95%	99%	-	-	-	-
																	Totals:	13.55	3.50	6.78	1.75
EMISSION FACTOR REFERENCES																	SOURCE SUMMARY				
a	SCC 3-05-020-10 for PM10, engineering judgement used for PM																DRILLING, BLASTING AND DOZING	-	0.06	-	0.02
b	AP-42, 1/95, last paragraph of Section 11.19.2: "Emission factor estimates for stone quarry																LIMESTONE RECEIVING, CRUSHING AND STORAGE	1.91	1.49	0.92	0.72
	blasting..."																IRON ORE RECEIVING, CRUSHING AND STORAGE (2000 Actual)	1.97	0.04	0.95	0.02
c	AP-42, 1/95, Table 11.19.2-2 for PM10, footnote "c" for PM																SILICA RECEIVING, CRUSHING AND STORAGE	4.69	0.39	2.25	0.19
d	Environmental Quality Management, Inc., 1995; based upon hi-vol sampling study at																GYPSUM RECEIVING, CRUSHING AND STORAGE	2.15	0.12	1.03	0.06
	Rinker Cement, FL in 1989.																SILO WITHDRAWAL, CONVEYING AND RAW GRINDING	0.05	0.21	0.02	0.10
e	AP-42, 1/95, Table 11.12-2 for PM, engineering judgement for PM10																COAL HANDLING	2.52	0.35	1.21	0.17
																	#1 & #2 CLINKER COOLERS AND CLINKER HANDLING SYSTEMS	48.11	78.65	14.89	37.65
																	CLINKER RECLAIM	10.80	45.96	5.40	22.98
																	CEMENT KILN DUST HANDLING	1.83	1.55	0.91	0.77
																	FINISH GRINDING AND ASSOCIATED HANDLING	2.93	3.79	1.43	1.77
																	CEMENT LOADOUT	13.55	3.50	6.78	1.75
																	GRAND TOTAL	90.52	136.12	35.79	66.20

APPENDIX B

Carbon Monoxide Modeling Review

MEMORANDUM

TO: Zach Klotovich, Associate Air Quality Engineer, State Office of Technical Services

FROM: Kevin Schilling, Air Quality Scientist, State Office of Technical Services KS

SUBJECT: Carbon Monoxide Modeling Review for Kilns at the Ash Grove Cement Company Facility; Inkom, Idaho

DATE: July 19, 2002

1. SUMMARY:

Ash Grove Cement Company requested a modification of the kiln carbon monoxide (CO) emissions limits in the Tier II operating permit for their Inkom, Idaho facility. Ash Grove was requested to demonstrate that CO emissions from the facility would not cause or significantly contribute to a violation of an ambient air quality standard, as required by IDAPA 58.01.01.403.02.

The Idaho Department of Environmental Quality (DEQ) has reviewed the analyses and supporting materials submitted, and has verified that operation of the kilns as specified in the consent order will satisfy the requirements of IDAPA 58.01.01.403.02.

2. DISCUSSION:

2.1 Introduction and Regulatory Requirements for Modeling

On June 10, 2002 a consent order became effective that amended Ash Grove's Tier II operating permit (issued on December 8, 1997) and a Permit to Construct (PTC)(issued on January 29,1999). The consent order clarified that the CO emissions limits of Kiln #1 (234.4 pounds per hour {lb/hr}) and Kiln #2 (275.8 lb/hr) were based on a 1-hour averaging period. Ash Grove also submitted a request to increase the allowable hourly emissions limits to 550 lb/hr CO for Kiln #1 and 650 lb/hr CO for Kiln #2.

Per IDAPA 58.01.01.403, no Tier II operating permit can be granted unless the applicant demonstrates to the satisfaction of DEQ that emissions from the facility "would not cause or significantly contribute to a violation of any ambient air quality standard." Atmospheric dispersion modeling was performed by the applicant's consultant, MFG, to fulfill these requirements.

2.2 Applicable Air Quality Impact Limits and Required Analyses

The Ash Grove facility is located in Bannock County, designated as an attainment or unclassifiable area for CO. If estimated maximum ambient air impacts from the emissions sources at the facility exceed the "significant contribution" levels of IDAPA 58.01.01.006.93, then DEQ modeling guidance requires a full impact analysis. A full impact analysis for attainment area pollutants requires adding ambient impacts from facility-wide emissions to a DEQ-approved background concentration value that is appropriate for each criteria pollutant at the facility location. The resulting CO concentration in ambient air is then compared to the National Ambient Air Quality Standards (NAAQS) listed in Table 1. Table 1 also specifies the modeled value that must be used for comparison to the NAAQS.

2.3 Background Concentrations

Applicable background concentrations are shown in Table 2. Statewide background concentrations used for the Ash Grove CO modeling were provided by DEQ to MFG.

Table 1. Applicable Regulatory Limits

Pollutant	Averaging Period	Regulatory Limit[a] ($\mu g/m^3$)[b]	Modeled Value Used[c]
Carbon Monoxide (CO)	1-hour	40,000[d]	Maximum 2nd highest at any modeled receptor
	8-hour	10,000[d]	

a. IDAPA 58.01.01.577
b. Micrograms per cubic meter
c. When using five years of meteorological data
d. Not to be exceeded more than once per year

Table 2. Background Concentrations

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)[a]
Carbon Monoxide (CO)	1-hour	11,500
	8-hour	5,200

a. Micrograms per cubic meter

2.4 Modeling Impact Assessment

The ambient air impact analysis was performed by MFG using the model ISC-PRIME - Version 99020. A modeling protocol was not submitted to DEQ prior to the analysis. DEQ conducted verification modeling using ISC-PRIME - Version 99020. Table 3 provides a summary of the modeling parameters used for the DEQ analysis. Figure 1 shows the revised receptor grid used for the modeling analysis. Upper air data were not available for 1995, the year when surface data are available. Therefore, the upper air data were generated from the average monthly morning and evening mixing heights from the Boise, Idaho, seven-year data set. The U.S. Environmental Protection Agency (EPA) meteorological preprocessor program MPRM was then used to generate hour-by-hour mixing heights for model input.

Table 3. Modeling Parameters

Parameter	Description/Values	Documentation/Additional Description
Model	ISCST3	Version 99020
Meteorological Data	Inkom, Idaho (surface); Boise, Idaho (upper air)	1995 for surface; 1984-1991 upper air
Model Options	Regulatory Default	
Land Use	Rural	Based on population density and actual land use
Terrain	Simple and Complex	Elevation data from digital elevation model (DEM) files: Fx11_75ma.dem and Fx11_75m.dem
Building Downwash	Used Building Profile Input Program (BPIP)	Building dimensions obtained from modeling files submitted
Receptor Grids (See Figure 1)	Grid 1	50 meter spacing along property boundary and along roads through the property
	Grid 2	10 km by 8 km grid with 250 meter spacing
	Grid 3	2.5 km by 2.5 km grid with 50 meter spacing near the kilns
Facility Location (UTM)	Easting	397.8 kilometers
	Northing	4,738.1 kilometers

Tables 4 and 5 provide emissions quantities and other emissions parameters. Stack location, stack height, stack diameter, stack gas temperature, and stack gas flow rate were provided by MFG.

Building and tank dimensions provided in the Building Profile Input Program (BPIP) file were compared against the scaled plot plan and the effect of buildings and tanks on plume downwash was included in the analysis.

Table 4. Emissions Quantities

Source	**Maximum Hourly Emissions Rate[a] pounds per hour (lb/hr)**
Pollutant	**CO**
Kiln #1	550
Kiln #2	650

a. Emissions rate used for 1-hour and 8-hour averaging periods

Table 5. Emissions and Stack Parameters

Source	**Source Type**	**Stack Height (m)[a]**	**Stack Diameter (m)**	**Stack Gas Temp. (K)[b]**	**Stack Gas Flow Velocity (m/sec)[c]**
Kiln #1	Point	22.56	1.83	519	7.06
Kiln #2	Point	22.56	1.83	464	7.18

a. Meters
b. Kelvin
c. Meters per second

A significant impact analysis was initially performed to determine if emissions from the facility would "significantly contribute" to pollutant concentrations in ambient air, as per IDAPA 58.01.01.006.93. A full impact analysis was then performed if emissions from the facility that were estimated to have an ambient impact exceeding "significant contribution" levels. The full impact analysis involved modeling impacts from the facility's emissions and adding those impacts to background concentrations.

3. MODELING RESULTS:

Modeled ambient air impact results from the significant impact analysis are provided in Table 6 for CO emissions. Because the potential ambient impact of the facility-wide emissions exceeds "significant contribution" levels for 1-hour and 8-hour CO, a full impact analysis was performed for those averaging times.

Table 6. Significant Impact Analysis for Criteria Pollutants (Facility-wide Emissions)

Pollutant	**Averaging Period**	**Ambient concentration ($\mu g/m^3$)**	**Significant Contribution[a] ($\mu g/m^3$)**	**Full Impact Analysis Required (Y or N)**
CO	1-hour	8,600[b]	2,000	Y
	8-hour	3,500[b]	500	Y

a. Significant contribution level as per IDAPA 58.01.01.006.93
b. Maximum 2nd highest modeled value at any receptor

Results of the full impact analysis are presented in Table 7 and indicate that operation of the facility as described in the consent order will not cause or significantly contribute to a violation of an applicable NAAQS. Figures 2 and 3 show the maximum-modeled CO 1-hour and 8-hour averaged concentration impacts, respectively.

Electronic copies of the modeling analysis are saved on disk. Table 8 provides a summary of the files used in the modeling analysis. The permitting engineer has reviewed this modeling memo to ensure consistency with the Tier II operating permit and technical memorandum.

Table 7. Full Impact Analysis for Criteria Pollutants (Facility-wide Emissions)

Pollutant	Averaging Period	Ambient Conc. ($\mu g/m^3$)[a]	Background Conc. ($\mu g/m^3$)	Total Ambient Conc. ($\mu g/m^3$)	Regulatory Limit[b] ($\mu g/m^3$)	Compliant (Y or N)
Carbon Monoxide (CO)	1-hour	8,600[c]	11,500	20,100	40,000	Y
	8-hour	3,500[c]	5,200	8,700	10,000	Y

a. Concentration in micrograms per cubic meter
b. IDAPA 58.01.01.577
c. Maximum 2nd highest modeled value at any receptor

Table 8. Dispersion Modeling Files

Type of File	Description	File Name
Met Data	1995 Inkom, Idaho for surface data average of 1984-1991 Boise, Idaho upper air	Inkom95.met
BEEST Input Files	CO 1-hour and 8-hour	AshGroveCO.BST
Each BST file has the following type of files associated with it:		
Input file for BPIP program		.PIP
BPIP output file		.TAB
Concise BPIP output file		.SUM
BEE-Line file containing direction specific building dimensions		.SO
ISCST3 input file for each pollutant		.DTA
ISCST3 output list file for each pollutant		.LST
User summary output file for each pollutant		.USF
Master graphics output file for each pollutant		.GRF
Some modeling files have the following type of graphics files associated with them:		
Surfer data file		.DAT
Surfer boundary file		.BLN
Surfer post file containing source locations		.TXT
Surfer plot file		.SRF

KS: G:\Technical Services\Modeling\Schilling\AshGrove\Ash Grove modeling Tech memo.doc

Figure 1 - Ash Grove CO Modeling for Consent Order

Receptor Grid for CO Modeling

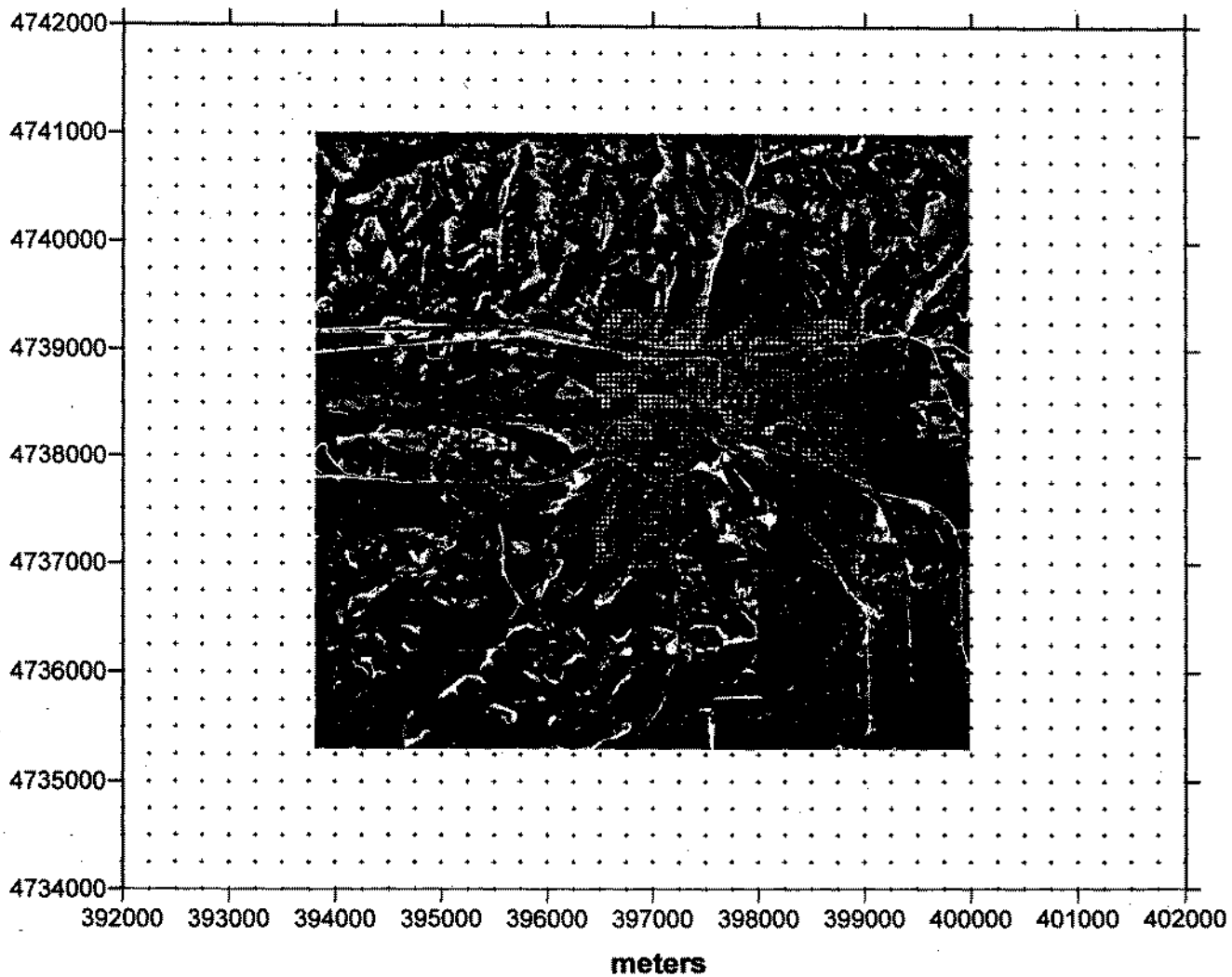


Figure 2 - Ash Grove CO Modeling for Consent Order

2nd Highest 1-Hour Modeled CO Concentrations

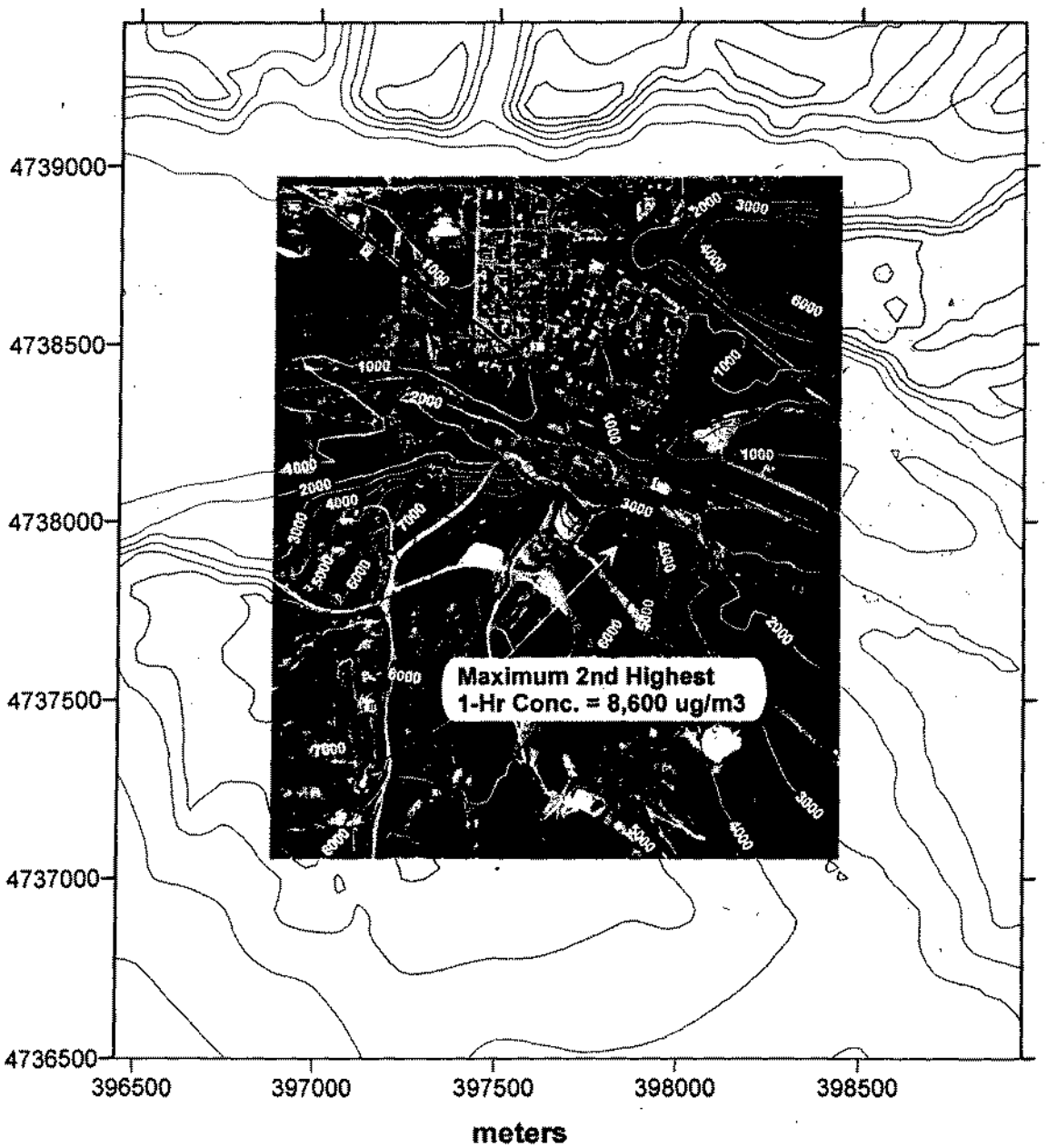
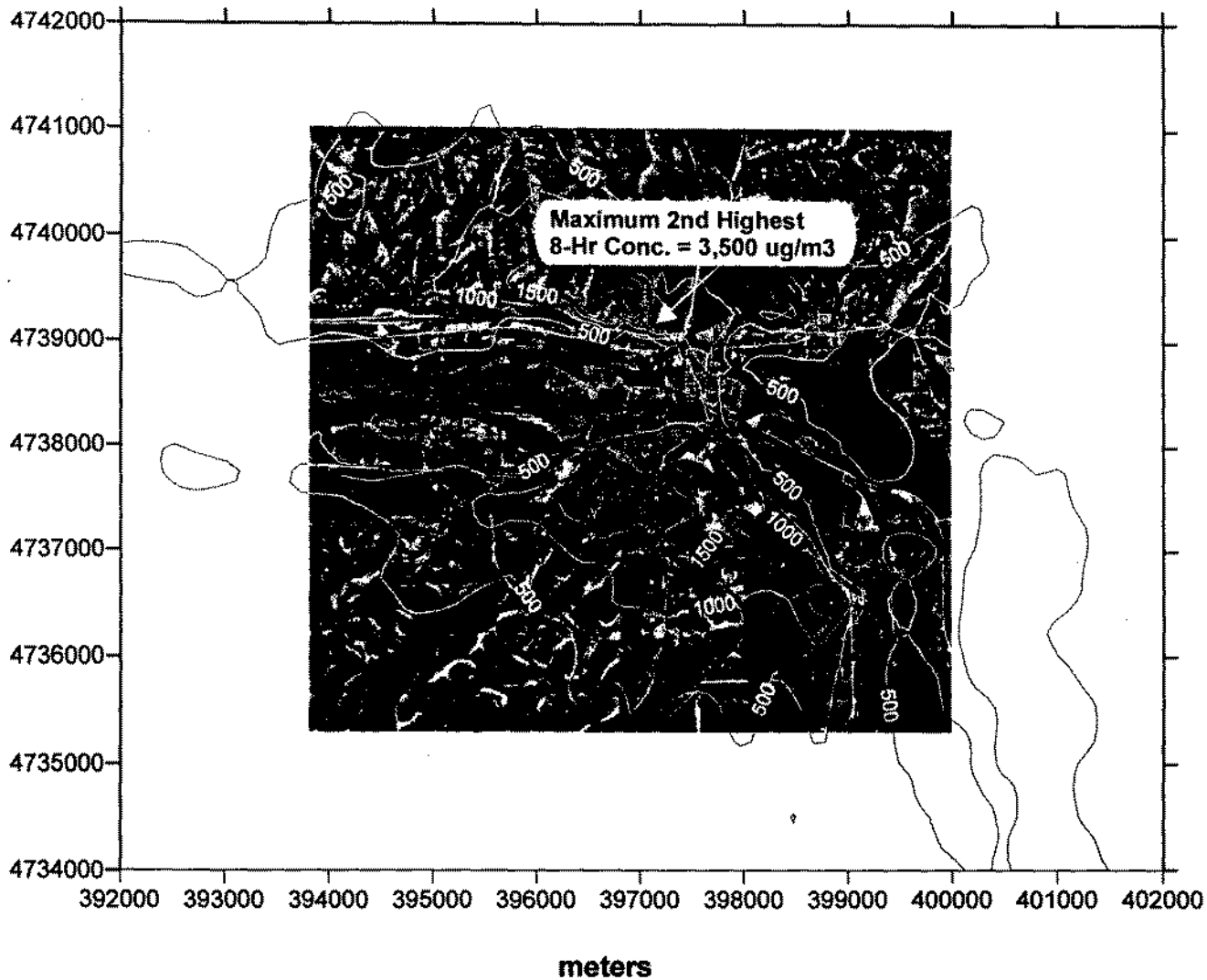


Figure 3 - Ash Grove CO Modeling for Consent Order

2nd Highest 8-Hour Modeled CO Concentrations



APPENDIX C

Public Comments

The following comments on the draft Tier II operating permit were received from Ash Grove Cement Company on September 23, 2002.
The Department's response to each comment is provided in bold.

Comments for Tier II

1) Revise Tier II permit according to Consent Order paragraph 21 which upon execution of the Consent Order immediately modified the existing December 1997 Tier II permit. These changes are not reflected in the draft Tier II modification. Failure to incorporate the modifications set forth in the Consent Order will causes conflict between the Consent Order language and the reissued December 1997 Tier II permit. Specifically, the following revisions to the Tier II were effective upon signing the Consent Order and must be reflected in the proposed modified Tier II for consistency:

Upon the effective date of this Consent Order, the Tier II operating permit issued on December 8, 1997 and the PTC issued on January 29, 1999 shall be amended as follows:

A. *Tier II operating permit condition 4.1.2 on page 16 of 35 (Source: #1 and #2 Rotary Kilns) shall be deleted.*

Permit condition 4.1.2 was deleted. The deleted condition stated, "Fuel usage, based on fuel heat content, shall be limited to 96 million Btu per hour (MMBtu/hr) and 797,000 MMBtu per yr (MMBtu/yr) for the No. 1 kiln, and to 113 MMBtu/hr and 938,000 MMBtu/yr for the No.2 kiln per applicants submittal." Permit condition 4.1.2 was replaced by the tire feed rate limit discussed in paragraph F below.

B. *PTC condition 2.5 on page 3 of 8 (Source: #1 and #2 Clinker Coolers and Process Rates) shall be deleted.*

The PTC condition was contained in the draft Tier II operating permit at condition 4.5 on page 28 of 50. The condition was deleted. The deleted condition stated, "The clinker coolers shall process no more than the ton-per-hour production, on a monthly average basis, of the kilns. The clinker coolers shall process no more than the annual production of the kilns."

C. *The portions of the December 8, 1997, Tier II operating permit setting forth the short term emissions limitations for particulate matter, nitrogen oxides, and carbon monoxide emitted from Kiln #1 and Kiln #2 shall be amended to impose the following emissions limitations:*

Kiln #1
Particulate Matter: 0.3 lb/ton of dry kiln feed
Nitrogen Oxides: 144 lb/hr based upon a 12 month rolling average
Carbon Monoxide: 234.4 lb/hr based upon a 1 hour average

Kiln #2
Particulate Matter: 0.3 lb/ton of dry kiln feed
Nitrogen Oxides: 193 lb/hr based upon a 12 month rolling average
Carbon Monoxide: 275.8 lb/hr based upon a 1 hour average

The emission limits were amended. The carbon monoxide limits were set at 550 lb/hr for kiln #1 and 650 lb/hr for kiln #2 as requested by Ash Grove and as allowed by consent order condition 21.E. The modeling analysis for the increased carbon monoxide emission limits is provided in Appendix B of the technical memorandum.

D. *Compliance with the emission limits set forth in paragraph 21.C of this Consent Order shall be ascertained by compliance with paragraphs 7-11 of this Consent Order.*

Paragraphs 7, 8, 9, and 11 of the consent order were incorporated into the Tier II operating permit. Paragraph 10 of the consent order was not incorporated because it was a one-time testing requirement that has been satisfied.

E. *Ash Grove requested a modification of the emission limits and averaging times set forth above for Carbon Monoxide (CO). Upon completion of the Department's review of the submitted data and a determination that modification of the emission limits complies with the National Ambient Air Quality Standard and the Rules for the Control of Air Pollution in Idaho, the Department may modify the emission limitations for CO in paragraph 22.C this Consent Order. The modified emission limitations shall be incorporated into the Tier II and Tier I operating permits.*

The modified carbon monoxide emission limits were included in the Tier II operating permit.

F. *Ash Grove shall be limited to a tire feed rate of no more than 500 pounds of tire derived fuel per hour based upon a 12 month rolling average on each kiln (specifically, permit condition 4.1 for the #1 and #2 Rotary Kilns is amended to include a new subsection).*

The tire feed rate limit was included in the draft permit at condition 4.1.2. on page 25 of 52.

G. *The portions of the December 8, 1997 Tier II operating permit setting forth the emissions limitations for the #1 and #2 kilns shall be amended to include the following emissions limitation for organic HAPs (specifically permit condition 2.1 for the #1 and #2 Rotary Kilns is amended to include a new 2.1.4: Appendix A is amended to include a Total HAPs emissions limitation for Kiln #1 and Kiln #2):*

<u>Kiln #1 and Kiln #2</u>
Total organic Hazardous Air Pollutant emissions shall not exceed 9.9 tons per year total emissions for both kilns determined on a 12 month rolling average.

Permit Condition 2.1.4 was added to the #1 and #2 Rotary Kilns portion of the Tier II operating permit.

H. *The permittee shall demonstrate compliance with the total organic HAPS emission limitation by performing annual Method 25A compliance tests on Kiln #1 and Kiln #2 while burning tires. The annual compliance tests will develop emissions factors for each kiln to be used during the following 12 month period to determine compliance with the annual emission limitation for total organic HAPs from the kilns (specifically permit condition 3 for #1 and #2 Rotary Kilns is amended to include this testing requirement for the kilns). Emissions will be determined for each kiln by the following equation to calculate organic HAP emissions from the kilns:*

Total kiln organic HAPs emissions = Organic HAP Emissions (Kiln 1) + Organic HAP Emissions (Kiln 2)

<u>Kiln #1</u>
Tons/yr organic HAP Emissions (Kiln 1) = [lb/hr emissions Kiln No.1 (method 25A) /kiln No. 1 tire feed rate during test (tons/hr)] x [rolling 12 month No.1 kiln tire feed (tons)/2000]

<u>Kiln #2</u>
Tons/yr organic HAP Emissions (Kiln 2) = [lb/hr emissions Kiln No.2 (method 25A) /kiln No. 2 tire feed rate during test (tons/hr)] x [rolling 12 month No.2 kiln tire feed (tons)/2000]

The requirements of paragraph H were included in the Tier II operating permit at permit condition 3.9 of the #1 and #2 Rotary Kilns portion of the permit.

I. *The Tier II operating permit issued pursuant to Paragraphs 19 and 20 shall be subject to public comment and shall require that compliance with the tire feed limits and total organic hazardous air pollutant emission limits set forth in Paragraphs 21.F-H be confirmed using appropriate Method 25A testing.*

The Tier II operating permit referenced in Paragraphs 19 and 20 of the consent order has not been drafted yet. Paragraph 21.I will be addressed once the permit is drafted.

In addition, these changes must necessarily be made in the draft Tier I to reflect the currently applicable requirements.

The consent order requirements are contained in the draft Tier I operating permit.

2) Ash Grove suggests that IDEQ take this opportunity of reissuing the Tier II operating permit to renew the permit, which is due to expire in December 2002. Ash Grove suggested that renewal be addressed through the Consent Order process prior to execution of the document in June 2002, but IDEQ did not act at that time. To conserve resources, Ash Grove resubmits the request to renew the existing Tier II, at least for a duration long enough to extend the effectiveness of the modified existing permit until a new Tier II operating permit (required by the Consent Order) is issued.

As noted in IDAPA 58.01.01.404.04, the expiration of a Tier II permit will not affect the operation of a stationary source or a facility during the administrative procedure period associated with the permit renewal process. The administrative procedure period is the time it takes the Department to issue a permit after a complete renewal application has been received. The Tier II permit application required by the consent order will be considered a renewal application and is due on December 8, 2002, the same day the current Tier II will expire. Therefore, the expiration date does not need to be extended.